



# Effect of the Length of Medical Certification on Safety

## BACKGROUND

Various medical factors may adversely impact driver performance and/or driver attention. The Federal Motor Carrier Safety Administration (FMCSA) requires a record of each driver’s physical qualification examination conducted to determine whether the driver is physically qualified to operate a commercial motor vehicle (CMV) based on the requirements in 49 CFR 391.41–391.49. FMCSA relies on a certified medical examiner (ME) to assess and determine whether a CMV driver meets the physical qualification standards in 49 CFR 391.41.

## OBJECTIVES

The objective of this study was to assess whether there is a relationship between the duration of CMV driver medical certification (the maximum 24 months versus less than 24 months) and driver safety performance. Medical Examiner’s Certificate (MEC), Form MCSA-5876, data reflecting the length of medical certification from the National Registry of Certified Medical Examiners (National Registry) and crash and inspection violation data from the Motor Carrier Management Information System (MCMIS) were used to evaluate the relationship between the duration of CMV drivers’ medical certification and crash and/or violation risk.

## METHODS

Matching the MCMIS crashes and inspection violations to the records in the National Registry involved five shared demographic variables. The matching procedure illustrated in Figure 1 used a hybrid approach where a computer algorithm and human review identified matches between the datasets. Analyses were presented for commercial driver’s license (CDL) drivers and non-CDL drivers (but not combined). Results were also stratified by age and four MEC lengths, with the 24-month MEC length being the reference group in the analysis.

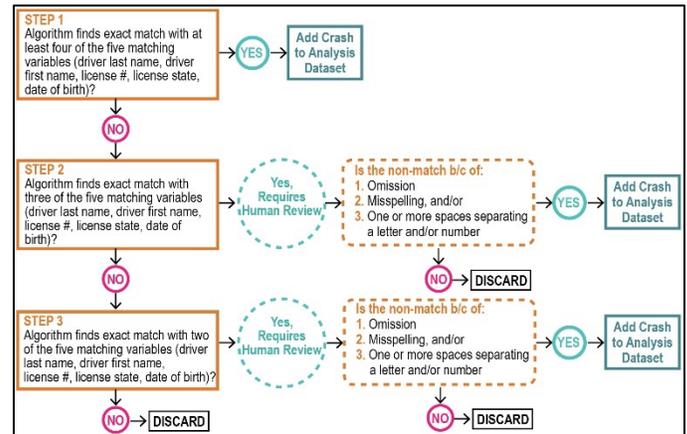


Figure 1. Diagram. Matching process to link National Registry records with MCMIS records.

## FINDINGS

Analyses were presented for CDL drivers and non-CDL drivers (but not combined). The distribution of MEC length did not vary by calendar year or ME job title (professional licensure). The relative crash risk for CDL drivers by age group and MEC length across the crash severities is displayed in Table 1 as compared to a 24-month MEC length. The relative crash risk is how much crash risk increased or decreased relative to drivers with a 24-month MEC length. Significant relative risk estimates are bolded in Table 1, those above 1.0 indicate an increase in crash probability (vice versa for those below 1.0). Most comparisons within each age group, where significant, found that CDL drivers with MEC lengths of less than 24 months were more likely to have a crash compared to CDL drivers with a 24-month MEC length. The same relationship was found for non-CDL drivers, but with fewer significant comparisons due to lower frequency counts.

**Table 1. Relative risk of crash for CDL drivers across crash severities.**

Age Group	MEC Length	All Crashes	Fatal Crashes	Injury Crashes	Towaway Crashes
Age 21–25	≤3 m	<b>1.200</b>	1.020	1.282	<b>1.215</b>
Age 21–25	>3 m – ≤6 m	1.140	1.002	1.118	1.126
Age 21–25	>6 m – ≤12 m	<b>0.905</b>	1.160	0.949	<b>0.902</b>
Age 26–30	≤3 m	1.120	0.915	1.166	1.104
Age 26–30	>3 m – ≤6 m	<b>1.243</b>	1.203	<b>1.433</b>	<b>1.264</b>
Age 26–30	>6 m – ≤12 m	<b>0.928</b>	1.010	1.018	<b>0.925</b>
Age 31–35	≤3 m	<b>1.286</b>	1.271	<b>1.203</b>	<b>1.287</b>
Age 31–35	>3 m – ≤6 m	<b>1.229</b>	1.140	1.341	<b>1.255</b>
Age 31–35	>6 m – ≤12 m	0.981	1.046	1.007	0.977
Age 36–40	≤3 m	<b>1.375</b>	1.387	<b>1.245</b>	<b>1.389</b>
Age 36–40	>3 m – ≤6 m	<b>1.251</b>	0.566	<b>1.331</b>	<b>1.284</b>
Age 36–40	>6 m – ≤12 m	<b>1.031</b>	1.090	<b>1.096</b>	<b>1.030</b>
Age 41–45	≤3 m	<b>1.246</b>	1.368	<b>1.212</b>	<b>1.241</b>
Age 41–45	>3 m – ≤6 m	<b>1.300</b>	1.014	<b>1.412</b>	<b>1.305</b>
Age 41–45	>6 m – ≤12 m	<b>1.051</b>	<b>1.139</b>	<b>1.101</b>	<b>1.053</b>
Age 46–50	≤3 m	<b>1.329</b>	1.346	<b>1.378</b>	<b>1.334</b>
Age 46–50	>3 m – ≤6 m	<b>1.222</b>	1.296	<b>1.210</b>	<b>1.233</b>
Age 46–50	>6 m – ≤12 m	<b>1.064</b>	<b>1.179</b>	<b>1.097</b>	<b>1.062</b>
Age 51–55	≤3 m	<b>1.360</b>	1.331	<b>1.463</b>	<b>1.345</b>
Age 51–55	>3 m – ≤6 m	<b>1.247</b>	<b>2.436</b>	<b>1.388</b>	<b>1.246</b>
Age 51–55	>6 m – ≤12 m	<b>1.072</b>	<b>1.223</b>	<b>1.116</b>	<b>1.073</b>
Age 56–60	≤3 m	<b>1.308</b>	1.158	<b>1.354</b>	<b>1.326</b>
Age 56–60	>3 m – ≤6 m	<b>1.227</b>	0.962	<b>1.498</b>	<b>1.225</b>
Age 56–60	>6 m – ≤12 m	<b>1.106</b>	1.116	<b>1.173</b>	<b>1.103</b>
Age 61–65	≤3 m	<b>1.417</b>	1.937	<b>1.500</b>	<b>1.403</b>
Age 61–65	>3 m – ≤6 m	<b>1.361</b>	1.132	<b>2.247</b>	<b>1.346</b>
Age 61–65	>6 m – ≤12 m	<b>1.141</b>	1.029	<b>1.169</b>	<b>1.140</b>
Age 66–70	≤3 m	<b>1.562</b>	1.020	<b>1.479</b>	<b>1.555</b>
Age 66–70	>3 m – ≤6 m	1.121	1.002	0.938	1.131
Age 66–70	>6 m – ≤12 m	<b>1.128</b>	1.160	<b>1.198</b>	<b>1.125</b>
Age ≥71	≤3 m	<b>1.428</b>	0.915	<b>1.691</b>	<b>1.464</b>
Age ≥71	>3 m – ≤6 m	<b>0.833</b>	1.203	0.971	0.850
Age ≥71	>6 m – ≤12 m	<b>1.119</b>	1.010	<b>1.158</b>	<b>1.113</b>

24 m is the reference group

Conflicting results of the violation analysis highlight the complex relationship between driver-related violation risk, vehicle- and hazmat-related violations, and MEC length. For CDL and non-CDL drivers, risk of receiving a driver-related violation during an inspection increased for MEC lengths of less than 24 months compared to a 24-month MEC length. However, when assessing multi-type violations (driver-related violations plus a vehicle- or hazmat-related violation), this trend was reversed.

## CONCLUSIONS

Overall, the longer the MEC length, the less likely drivers are to have a crash or driver-related violation. However, it would be premature to conclude that drivers with MEC lengths of less than 24 months are more likely to have a crash or inspection violation than drivers with 24-month certification, as the specific medical condition

and any possible treatment were unknown. Also, crash data in the MCMIS dataset are not coded for fault, and thus there is no way to know if the driver or the driver’s medical condition played any role in the cause of a crash. A future study should analyze data on why a driver received less than 24-month medical certification.

The MEC length did not vary by calendar year or ME job title (professional licensure) over the study period. This suggests that both the eligibility criteria for MEs and the training provided by different training organizations to the whole range of healthcare professionals certified and listed as MEs on the National Registry produce consistent outcomes and are appropriate.

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